

What is claimed is

1. A process for preparing isocyanurate-containing polyisocyanates by at least partly trimerizing (cyclo)aliphatic diisocyanates, which comprises carrying out the reaction in the presence of at least one trimerization catalyst selected from the group of the ammonium salts, substituted by four hydrocarbon radicals, of α -hydroxycarboxylates.
2. A process for preparing isocyanurate-containing polyisocyanates by at least partly trimerizing (cyclo)aliphatic diisocyanates, which comprises using, as the trimerization catalyst, at least one compound of the formula (I)



where

15 $\text{R}^1, \text{R}^2, \text{R}^3, \text{R}^4, \text{R}^5$ and R^6 may each independently be the same or different and are each a straight-chain or branched C_1 - to C_{20} -alkyl group, an optionally substituted C_5 - to C_{12} -cycloalkyl group, an optionally substituted C_7 - to C_{10} -aralkyl group, or an optionally substituted C_6 - C_{12} -aryl group, or
20 two or more of the R^1 to R^4 radicals together form a 4-, 5- or 6-membered alkylene chain or, together with a nitrogen atom, form a 5- or 6-membered ring which may also contain an additional nitrogen or oxygen atom as a bridge member, or together form a multimembered, preferably six-membered, polycyclic system, preferably bicyclic system, which may also contain one or more
25 additional nitrogen atoms, oxygen atoms or oxygen and nitrogen atoms as bridge members, and

30 R^5 and R^6 may additionally be hydrogen, or C_1 - C_{20} -alkyl or C_6 - to C_{12} -aryl, each optionally interrupted by one or more oxygen and/or sulfur atoms and/or one or more substituted or unsubstituted imino groups, or substituted by functional groups, aryl, alkyl, aryloxy, alkyloxy, halogen, heteroatoms and/or heterocycles.

3. The process according to claim 2, wherein the R^1 to R^4 radicals are each independently selected from the group consisting of methyl, ethyl, propyl, isopropyl, n-butyl, tert-butyl, phenyl and benzyl.
4. The process according to claim 2 or 3, wherein the R^5 and R^6 radicals are each independently selected from the group consisting of hydrogen, methyl, ethyl, n-propyl, n-butyl, phenyl, 2-carboxyethyl and 2-hydroxyethyl.

5. The process according to claim 1 or 2, wherein the ammonium ion is selected from the group consisting of tetraoctylammonium, tetramethylammonium, tetraethylammonium, tetra-n-butylammonium, trimethylbenzylammonium, triethylbenzylammonium, tri-n-butylbenzylammonium, trimethylethylammonium, tri-n-butylethylammonium, triethylmethylammonium, tri-n-butylmethylammonium, diisopropylidiethylammonium, diisopropylethylmethylammonium, diisopropylethylbenzylammonium, N,N-dimethylpiperidinium, N,N-dimethylmorpholinium, N,N-dimethylpiperazinium or N-methyldiazabicyclo[2.2.2]octane.
- 10 6. The process according to claim 1 or 2, wherein the α -hydroxycarboxylate ion is selected from the group consisting of the anions of glycolic acid (hydroxyacetic acid), lactic acid, citric acid, 2-methyllactic acid (α -hydroxyisobutyric acid), 2-hydroxy-2-methylbutyric acid, 2-hydroxy-2-ethylbutyric acid, 2-hydroxy-3-methylbutyric acid, 2-hydroxycaproic acid, malic acid, tartaric acid, glucuronic acid, gluconic acid, citramalic acid, saccharic acid, ribonic acid, benzilic acid, quinic acid, mandelic acid, hexahydromandelic acid, 2-hydroxycaproic acid and 3-phenyllactic acid.
- 20 7. The process according to any of the preceding claims, wherein the trimerization catalyst is deactivated after the desired degree of trimerization has been attained.
8. The process according to claim 7, wherein the trimerization catalyst is deactivated with dibutyl phosphate or di(2-ethylhexyl) phosphate.
- 25 9. The process according to any of the preceding claims, wherein the diisocyanates used are those which have a total chlorine content of less than 100 ppm by weight.
- 30 10. The process according to any of the preceding claims, wherein the diisocyanates used are hexamethylene 1,6-diisocyanate and/or 1-isocyanato-3-isocyanato-methyl-3,5,5-trimethylcyclohexane.
- 35 11. The use of ammonium salts, substituted by four hydrocarbon radicals, of α -hydroxycarboxylates as a trimerization catalyst for isocyanates.
- 40 12. The use of the polyisocyanates obtainable according to any of claims 1 to 10 for producing polyurethane coatings, for polyurethane dispersions and adhesives, and as a polyisocyanate component in one- and two-component polyurethane systems for high-grade, weather-resistant polyurethane coatings and high-solids coatings.